PSI
PERCEPTION
Sensors and Instrumentation

# ASLOC Biometric Imaging System

# User Manual

# &

# Technical Specifications

# PSI

Perception Sensors and Instrumentation Ltd. (PSI) are specialists in the design of sensors, instrumentation, and imaging hardware. PSI are a leading supplier of biometric imaging hardware, a designer of machine vision solutions for cutting-edge process control applications and the source of a range of highly regarded non-optical industrial instrumentation solutions. Founded in 2004 PSI has worked in expanding its facial recognition hardware, designing both illumination and camera technology to maximise the performance of its systems that focus on image acquisition for biometric applications. PSI applies this experience in a range of bespoke vision-based process control solutions. PSI has been installing and supplying proven and reliable facial recognition imaging hardware to industry for over 10 years, becoming a leading supplier to UK airports. It is estimated PSI's biometric solutions verify over 500,000 individuals every day, which equates to over 5 people per second every day.

# ASLOC Imaging System

ASLOC is a range of indoor biometric imaging hardware systems.

Each model in the range includes a least one facial recognition optimised imaging system that comprises of our advanced camera technology and evenly distributed Near Infra-red (NIR) illumination.

Designed to eliminate ambient lighting effects, spectral reflection, motion blur and image distortion, ASLOC utilises its hardware to produce high speed, high quality detailed imaging, ideal for exceptionally reliable facial recognition.

The ASLOC range of products are fully approved biometric hardware within major UK Airports. They are aiding to increase efficiency at check in, baggage drops and boarding areas within UK airports. This lowers overall queues and travellers time within the airport itself.

ASLOC plays a major role in working to achieve an important milestone within UK airports and travel, creating a highly secure, biometric based, passportless environment to achieve a smooth flow from check in to boarding a flight.

The ASLOC hardware interacts with an AI-based SDK. The system includes a provision of host-controlled status RGB LEDs to give user feedback and can run on both Linux and Windows based hosts.

PSI offer various forms of ASLOC. The system can be specified as a single or dual imaging system and with or without an anti-glare touch screen, that can be portrait (6.5" active display) or landscape (8" active display).

ASLOC is intended for indoor use without the presence of high dust levels. It is housed in a dry powder coated aluminium tubular housing supported by a dry powder coated optional aluminium mounting base. The camera unit itself has a scratch resistant, hard coated NIR cast acrylic filter front face.

The system has four inbuilt cables to use for interfacing with the host computer and power. These cables consist of two USB 3.0 cables, one to enumerate the camera with the host computer and one to activate the touch capability of the screen, a HDMI connector to project the host computer onto the touch screen and a 2-core power extension cable, which is terminated with a 2.1mm DC barrel connector for powering the unit.

# Installation of ASLOC

ASLOC is designed to be clamped into the application gate. PSI can also provide an optional base stand to support the pole, give precise height adjustment with a 145mm range and a mounting point at the base. The pole itself has a 185mm long clamping area as highlighted below.

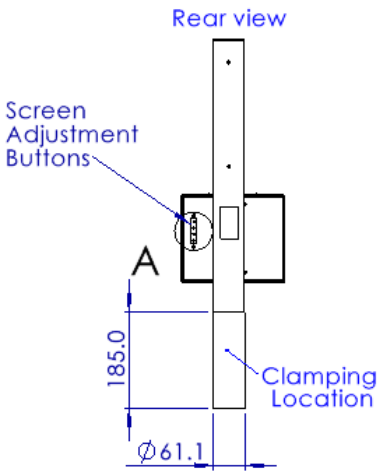



*Figure 1 Clamping location on ASLOC pole*

ASLOC can be positioned accurately at a set calculated distance to facilitate the capture of full-face images over a wide height range of targets. Some height adjustment of the unit is available by means of sliding the tubular enclosure inside a circular mounting base. Maximum and minimum heights are highlighted in the Dimensional Drawings of this document. There are four locking grub screws at the rear of the base by which to hold the unit in situ once the desired height is set.

Three M8 tapped holes, located in the circular mounting base, allow the stand to be securely bolted down onto an appropriately selected surface. Three M8 x 60mm grub screws, three M8 spring washers, three M8 plain washers and three M8 nuts are provided to secure the unit in place. Please note three holes for the M8 grub screws to clear and a cable entry hole will be required in the mounting surface. This will allow the unit to be supported and cables to exit the bottom of the imaging unit to a host.

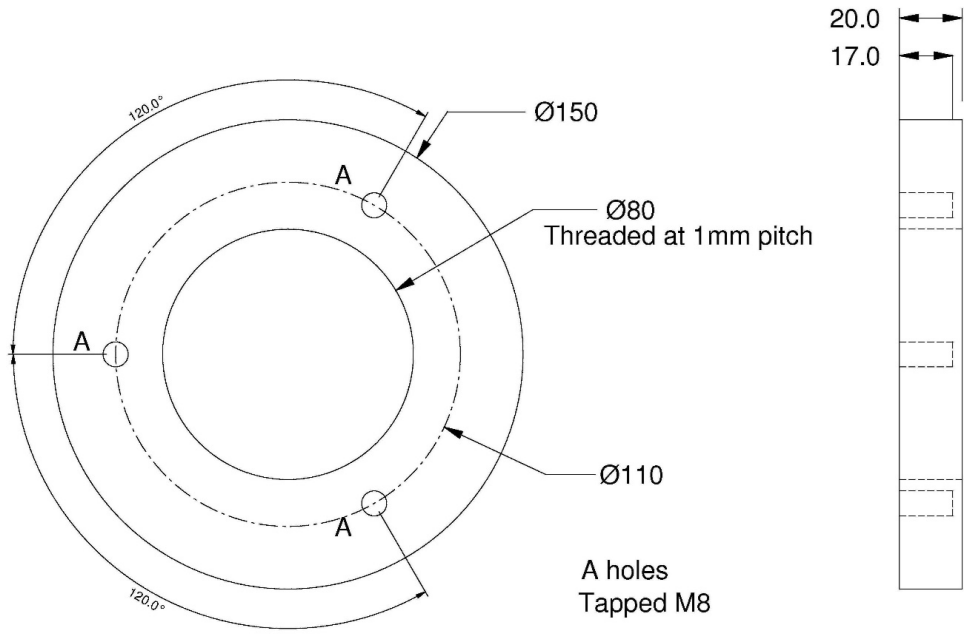



*Figure 2: Image of the underneath and thickness of the pole base, highlighting grub screw locations and the central region where cables exit the device.*

**CAUTION: The ASLOC imaging unit must be securely bolted to a stable surface prior to operation. The ASLOC imaging unit has been specifically designed to operate as an in situ bolted down or clamped instrument. Its height and small diameter make the instrument inherently unstable until securely bolted down or clamped. The unit must therefore not be left in a position where it is subject to being knocked over prior to being secured down. Please do not allowed to system to fall.**

We can also optionally provide wall mount brackets as an alternative to the base.

If the camera lens is mounted at 1710mm from ground level of the room, the camera can detect the following height range of faces.

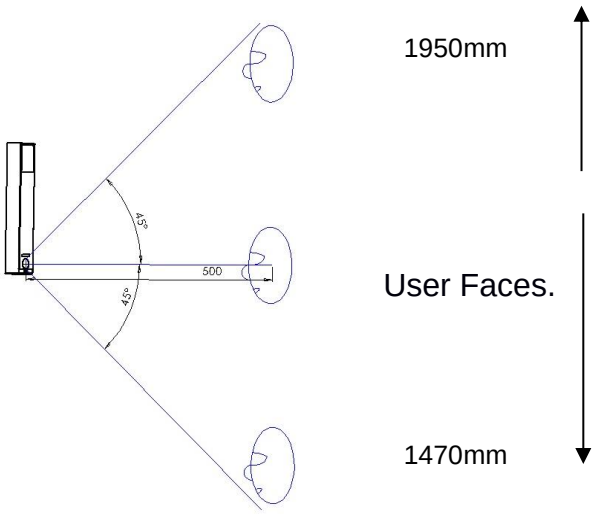



*Figure 3: Recommended height of camera from ground level of the room. Showing head positions within camera range at 500mm from the terminal, if camera lens is mounted at 1710mm from room ground level. Please note to achieve height the unit would be mounted onto a platform surface.*

For children and wheelchair users an additional lower unit is recommended, where the camera lens can cover a lower height range. In all instances, a clear floor area allowing the subject to be positioned approximately 500mm from the imaging system must be provided.

## Screen mounting Options (Landscape 8”)

ASLOC’s landscape screen can be specified to be optimally positioned for either left or right sided terminal gates. ASLOC 8” displays are angled towards the end user. The main advantage is that a larger, more user-friendly display can be used, angled towards the end user to increase clarity and the overall user experience. The ASLOC is angled at 35° towards the user. At this angle, ASLOC has been designed so the overall width of the unit meets the dimensional requirements of the gates they are intended to be installed into.

Depending on if ASLOC is mounted in a left or right sided gate, the screen is offset to give the user an optimal view. Alternatively, the screen can be positioned centrally if it is to be viewed straight on. Please specific upon placement of order how ALSOC is intended to be mounted with respect to the user and we will manufacture to meet specification. The screen can be repositioned afterwards, but this does involve opening the screen casing and carefully unscrewing from the pole to relocate into the new position on the pole.

**Left Offset Screen** **Right Offset Screen**

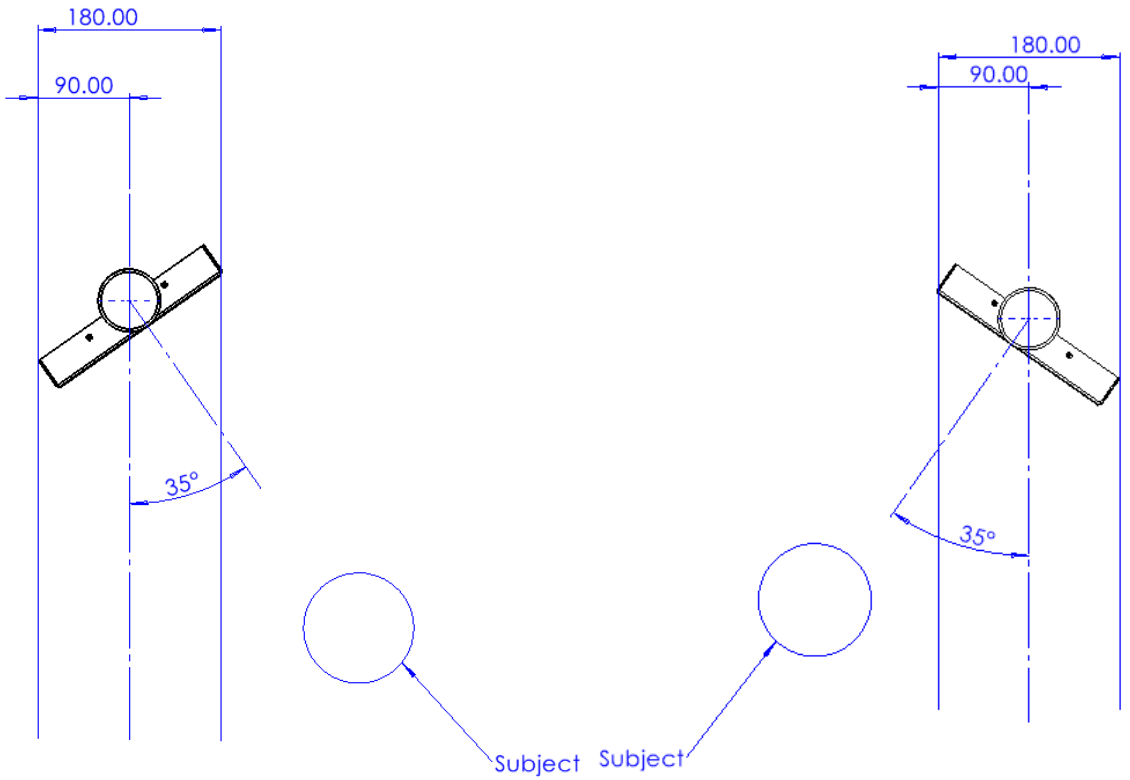



*Figure 4: Dimensional top-down view drawing highlighting benefits of screen offsets*

The diagram above highlights the advantage of an offset screen. Offsetting the screen prevents the screen framework overhanging either side of the gate application, if the ASLOC pole is positioned at 35° to the subject. The screen must be offset to account for the position of the gate to the subject.

# Dimensional Drawings and Interfaces

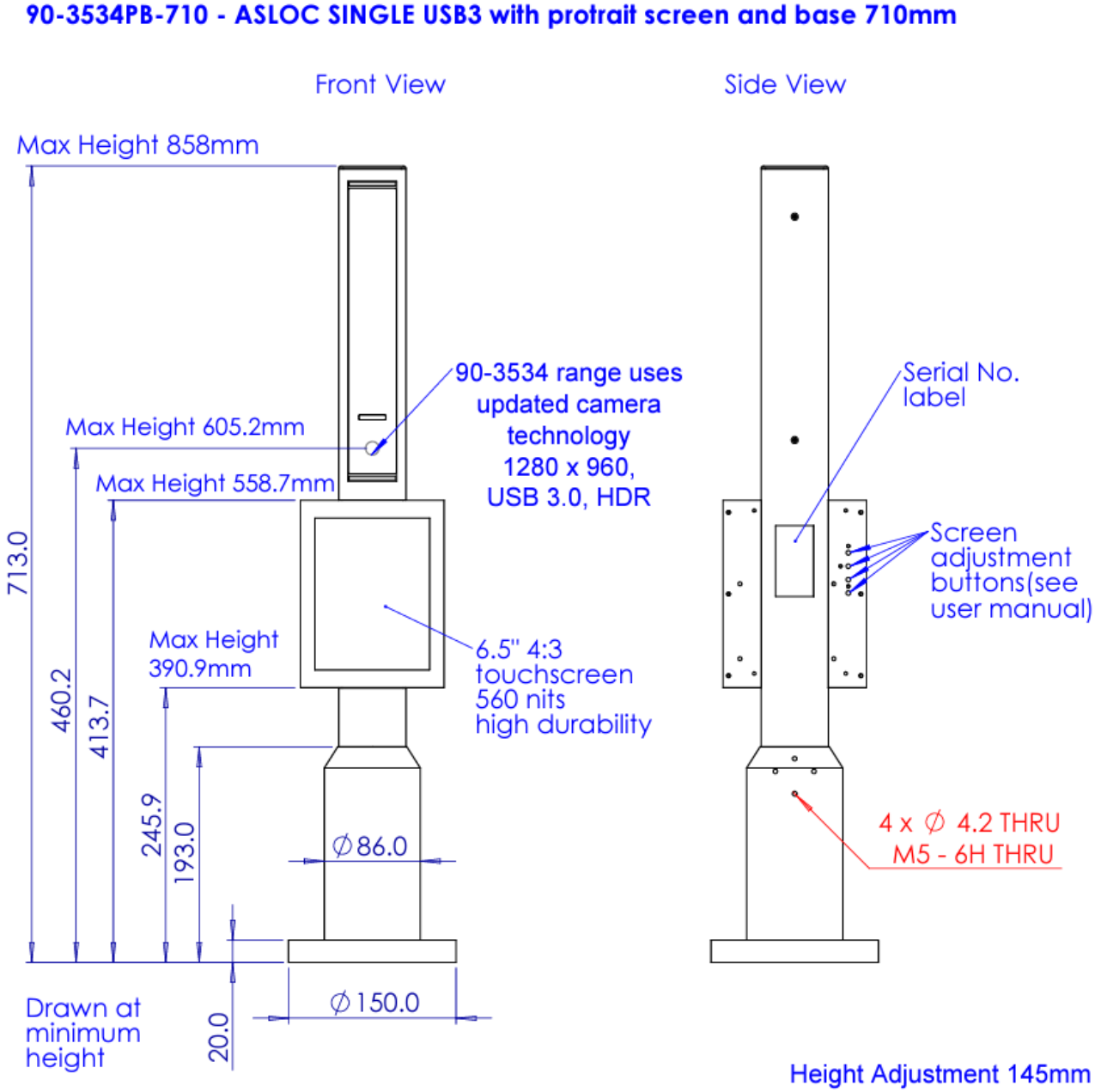



*Figure 5: Dimensional drawing of the ASLOC Single USB3 710 Portrait with base.*

Please note the touch screen size is 6.7” diagonal (136mm (H) x 102mm (W) (5.4” x 4.0”)), however the active display size is slightly smaller at 6.5” diagonal (132.48mm (H) x 99.36mm (W)).

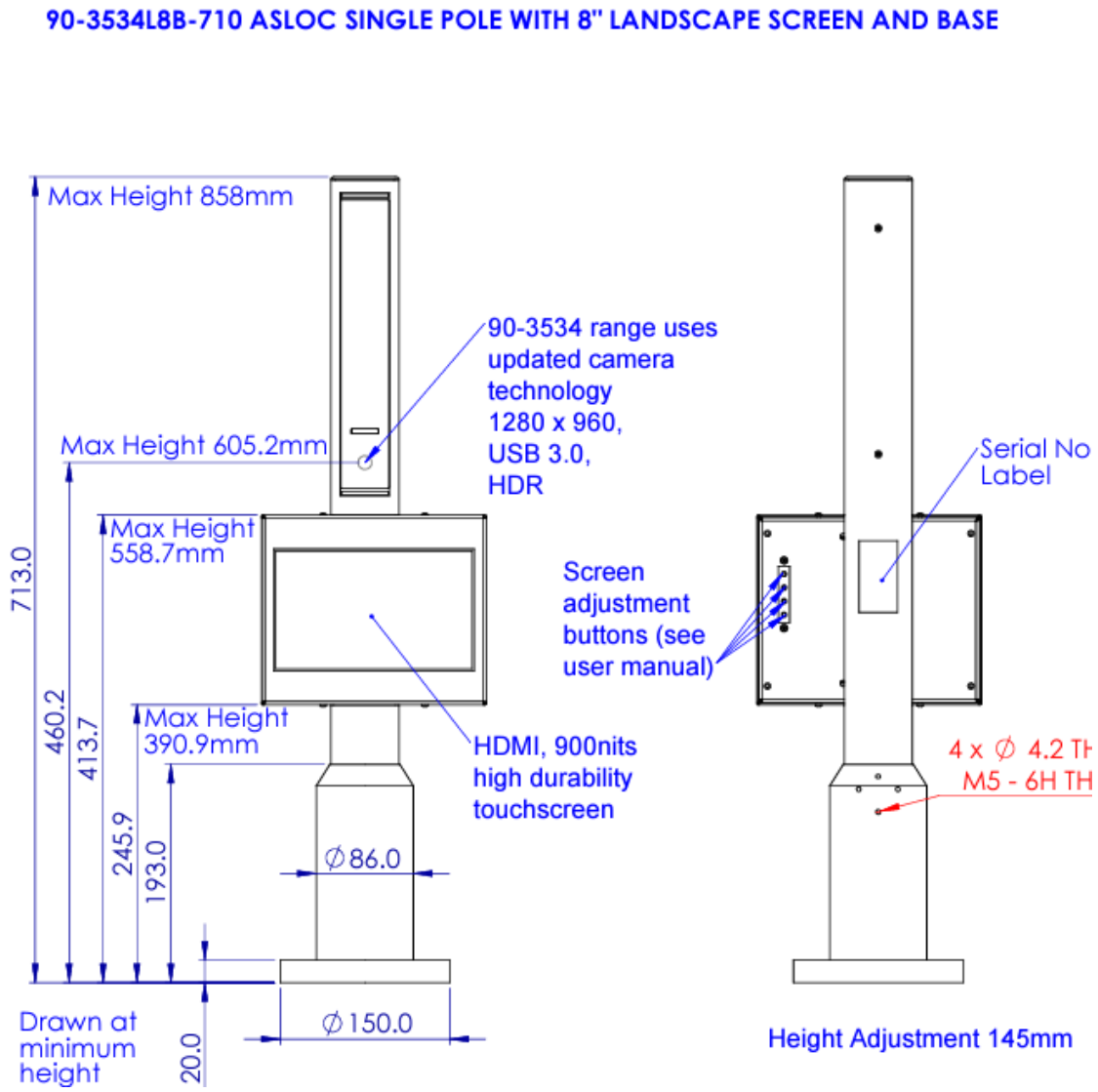
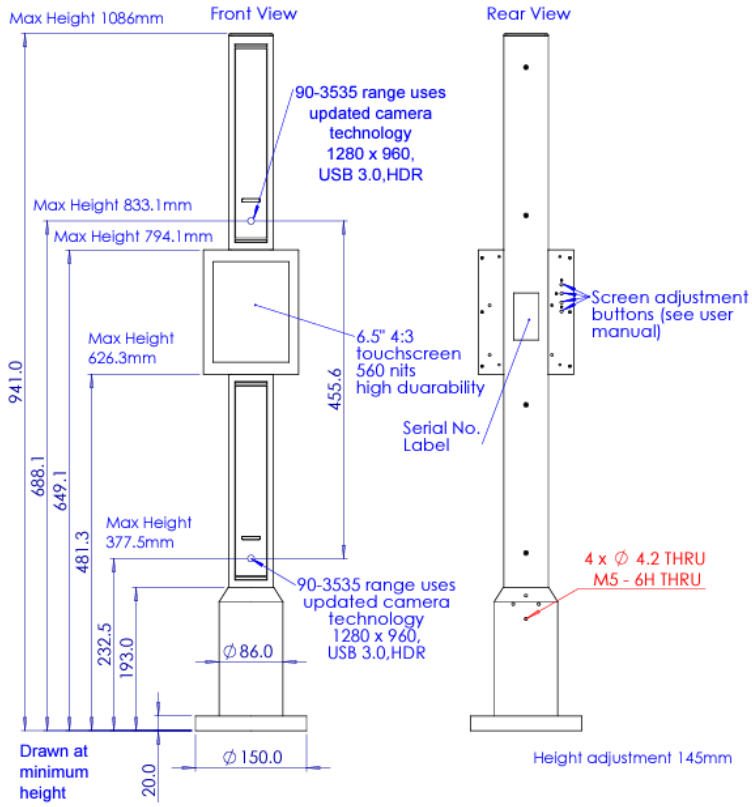


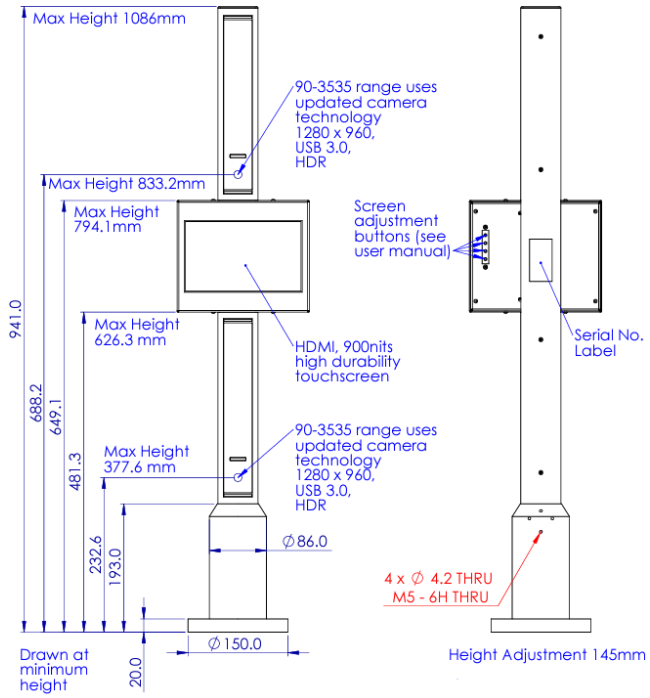

*Figure 6: Dimensional drawing of the ASLOC Single USB3 710 Landscape with base.*

Please note the touch screen size is 8” diagonal (174mm (H) x 104.4mm (V)), however the overall dimension of the framed screen is 198.8mm (H) x 167.8mm (V) X 34mm (D). The screen sits inside the 61.1mm diameter pole.

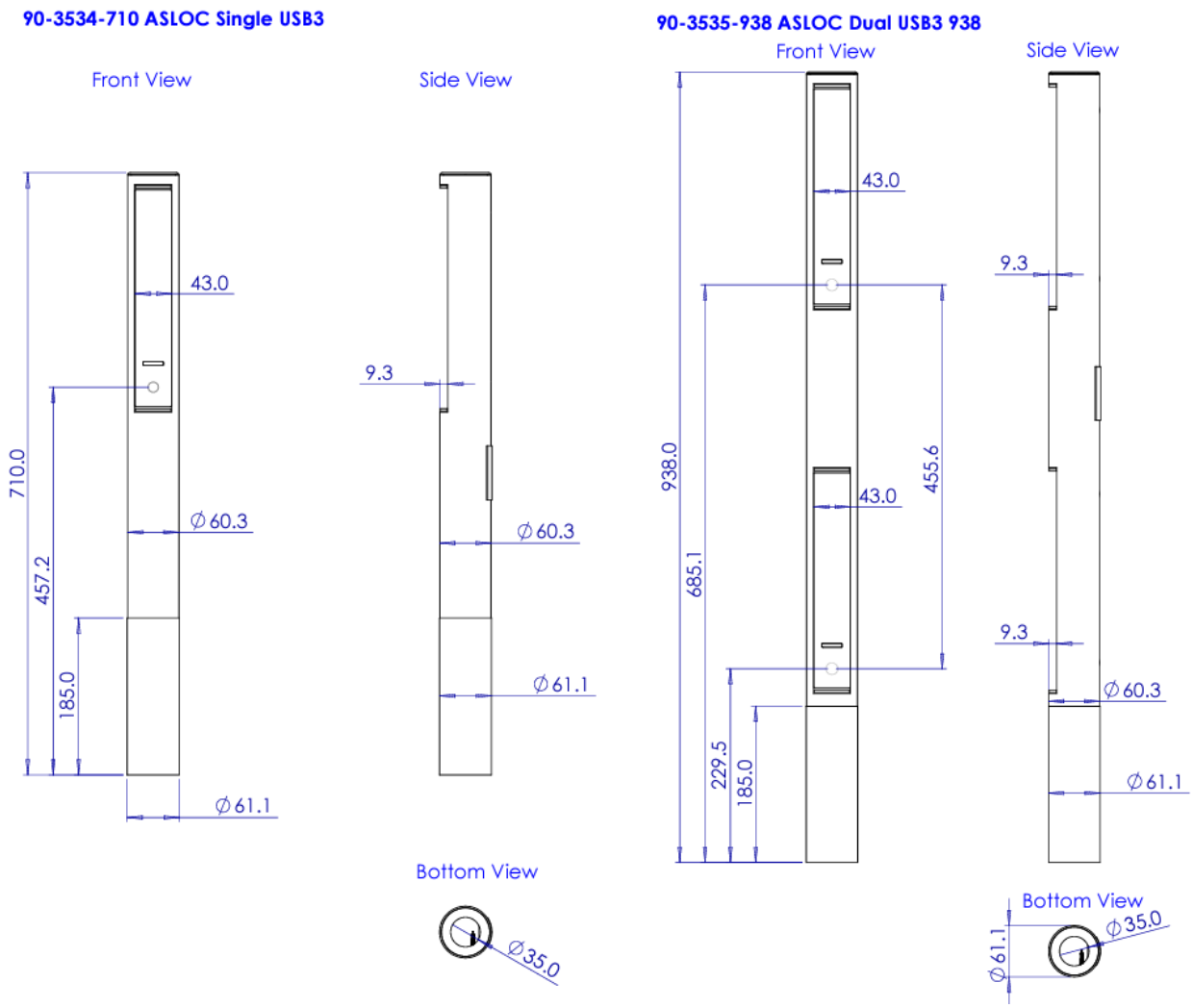
## 90-3535P-938 ASLOC DUAL POLE WITH PORTRAIT SCREEN AND BASE




## 90-3535L-938 ASLOC DUAL POLE WITH LANDSCAPE SCREEN AND BASE




*Figures 7a, 7b: Dimensional drawings of the ASLOC Dual Camera units with Portrait and Landscape screen, all with bases. We can provide bespoke heights to suit the application, please contact us for further information on bespoke builds.*




*Figures 8a and 8b ASLOC single and dual USB3 poles with no screens or base dimensional drawings*

The ASLOC system is provided with a USB3.0, HDMI and 2.1mm DC barrel power extension cable, along with the power supply unit. These cables can be run to a suitable location however please note that the USB3 cable is a maximum length of 3 metres. The maximum cable length is always a function of the cable quality. The power supply provided should use cable rated at a minimum of 2.5A and should be mounted in accordance with local regulation.

Connect the USB cables and HDMI cable to the host and apply power via the 12V power supply provided

# Operation of ASLOC

Once mounted and enumeration is complete the hardware is operational and can reliably undertake facial recognition as directed by the host computer. The screen has adjustment buttons at the rear of the unit to auto adjust the sizing of the screen and set a desired brightness.

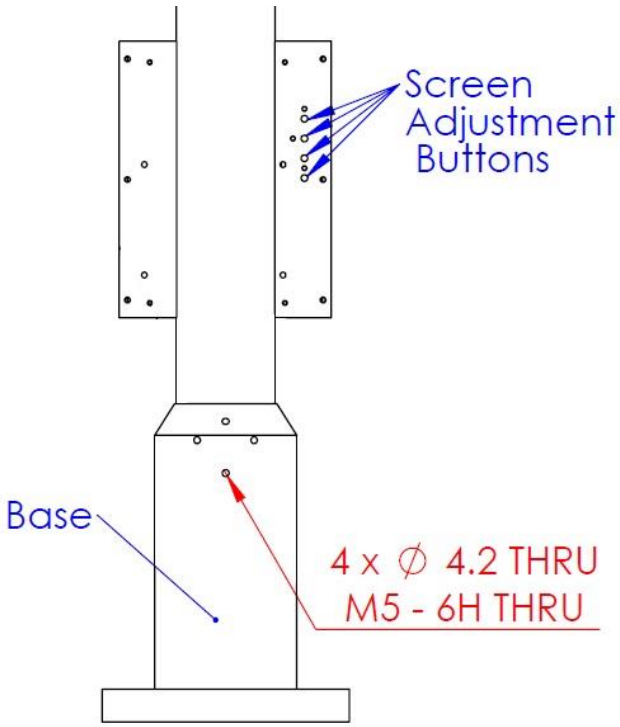
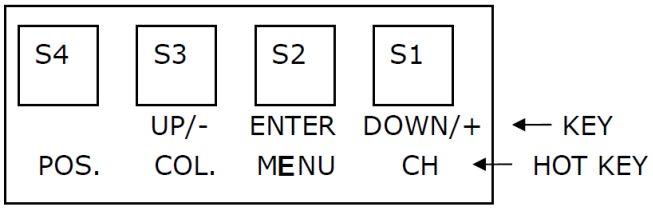



*Figure 9: Rear of the ASLOC Portrait unit with base highlighting screen adjustment buttons and the height adjustment location.*

# Operation of the Portrait screen and its adjustment buttons

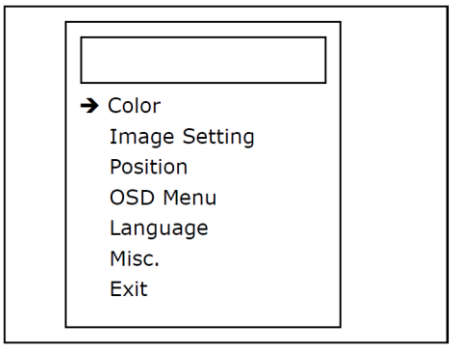
Located at the rear of the screen are 4 function buttons that control the display. These functions are:




- **"POS"** key (S4): **Auto Position calibrated key**, when pressed this key will force the display perform the position calibrated routine. This key is only valid at the VGA input signal condition.
- **"COL"** key (S3): **Auto Colour calibrated key**, when pressed this key will force the display perform the Colour calibrated routine. This key only valid at the VGA input signal condition.
- **"MENU"** key (S2): This key will bring up a menu of settings for the display, there are only three valid buttons once entering the menu, S1, S2 and S3.
- **"CH"** key (S1): There are two input signal channels available on this Board. When both input signals are applied, pressing this key can change the input channel from one into the other. ASLOC Poles have only one of the two input signals applied; therefore, board will auto select the channel that has signal feed, thus, this Key (S1) does not have function as a Hot Key.

## Display MENU

When pressing S2 under normal display conditions, the screen settings menu will become active (as shown below)

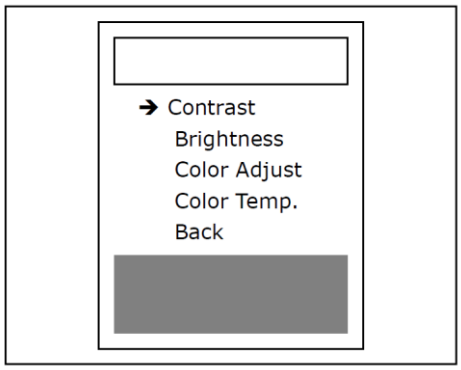



At this point only three Keys S1, S2, S3 are valid. The functions are as follows:

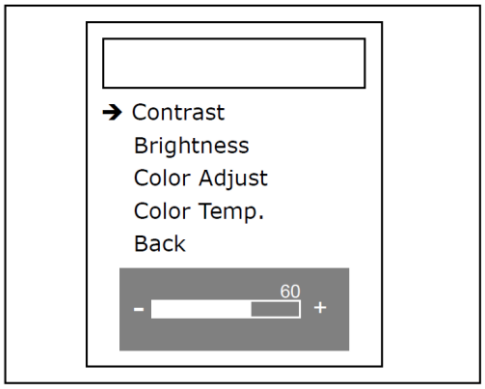
- Pressing the **Menu** (S2) key will change the key into an **"ENTER"** key, it will also bring up the first layer menu screen.

- **S1 (DOWN/+)** key and **S3 (UP/-)** key are used to scroll to the function needed in the menu with S2 being the enter function. After pressing enter the display will show sub menus. Scrolling down and selecting **"EXIT"** on the menu, will bring the menu up one layer.

- Press the **Menu/Enter (S2)** key while at the "**Color"** Bar and you will enter the second layer to adjust **the picture quality** of the display.

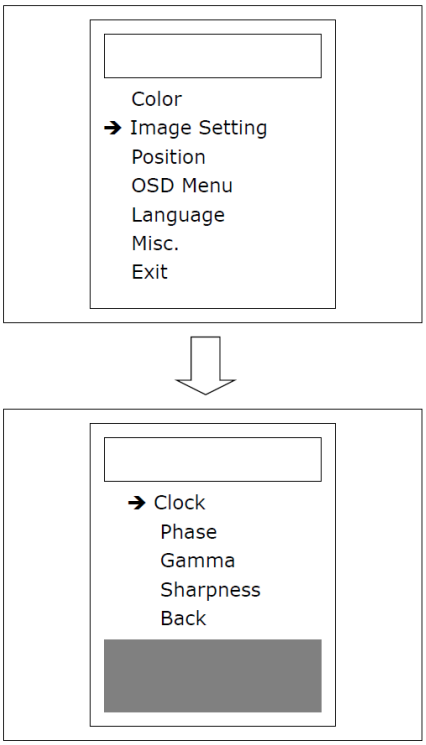



- By pressing the **S1 (DOWN/+)** key or **S3 (UP/-)** key, select the function bar needed. Press the **S2 (ENTER)** key to enter (select) that function and enter the 3rd layer, which will populate the shaded block below the options.

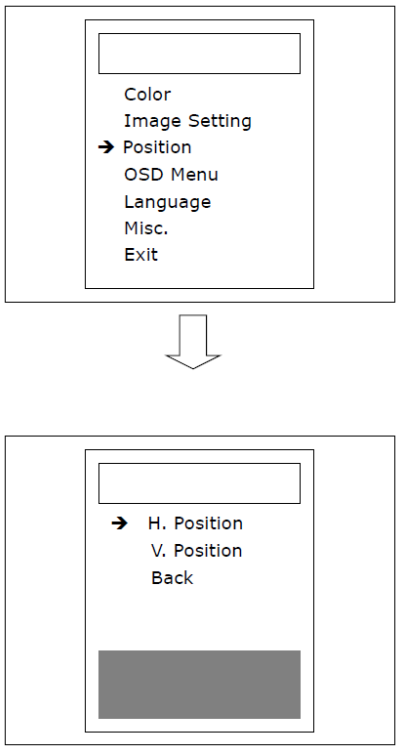



- By pressing the **S1 (DOWN/+)** key or **S3 (UP/-)** key, increase or decrease the selected Value (e.g. contrast in the example above). Press the **S2 (ENTER)** key or select the **"BACK"** Bar can move **layer 3** into **Layer 2**.

- Press the **Menu/Enter (S2)** key while at the Layer 1, **Image Setting** Bar, will enter the second layer to adjust **the picture Setting**.

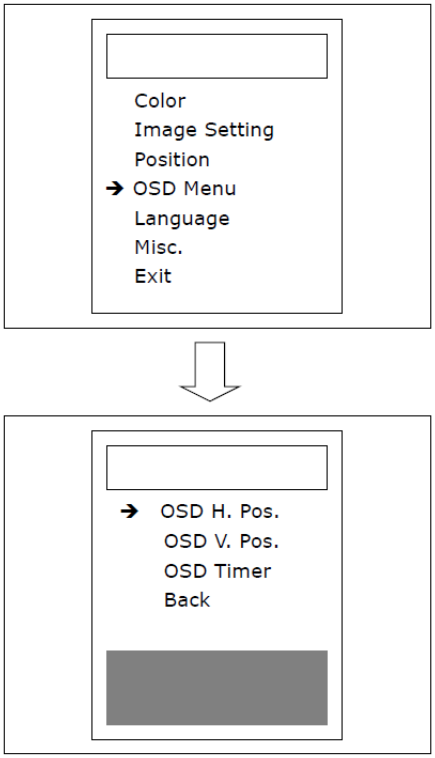



- By pressing the **S1 (DOWN/+)** key or **S3 (UP/-)** key, select the function bar needed. Press the **S2 (ENTER)** key to enter (select) that function and move into the 3rd layer to adjust settings.
- Press the **Menu/Enter (S2)** key while at the Layer 1, **Position** Bar and this will enter the second layer to adjust **the Display's position**.



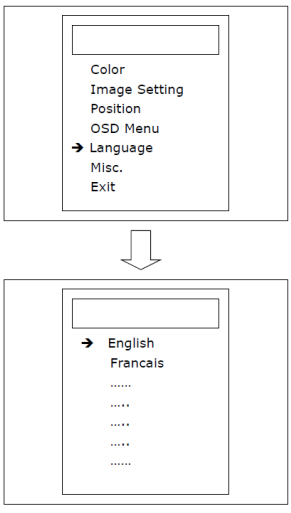

- By pressing the **S1 (DOWN/+)** key or **S3 (UP/-)** key, select the function bar needed. Press the **S2 (ENTER)** key to enter (select) that function and move into the 3rd layer to adjust the setting.

- Press the **Menu/Enter (S2)** key while at the Layer 1, to highlight the **OSD Menu** Bar. This will enter the second layer to adjust **the OSD ICON's position and Timer**.



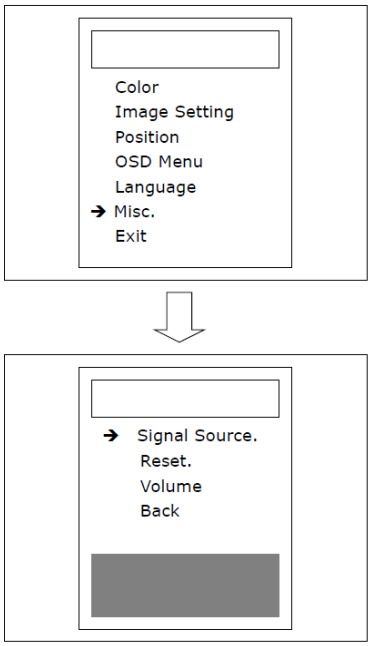

- By pressing the **S1 (DOWN/+)** key or **S3 (UP/-)** key, select the function bar needed. Press the **S2 (ENTER)** key to enter (select) that function and move into the 3rd layer. The same method applies to the rest item of the **OSD ICON Position.**

- Press the **Menu/Enter (S2)** key while at the Layer 1 on the **Language** Bar. This will enter the second layer to select the **Language**. There are 7 languages can be selected.



- By pressing the **S1 (DOWN/+)** key or **S3 (UP/-)** key, select the Language bar needed. Press the **S2 (ENTER)** key to enter (select) that language. The menu will move back to the layer 1 automatically in the selected language.

- Press the **Menu/Enter (S2)** key while at the Layer 1, **Misc.** Bar. This will enter the second layer to select some Board Functions.




- By pressing the **S1 (DOWN/+)** key or **S3 (UP/-)** key, select the function bar needed. Press the **S2 (ENTER)** key to enter (select) that function and move into the 3rd layer.

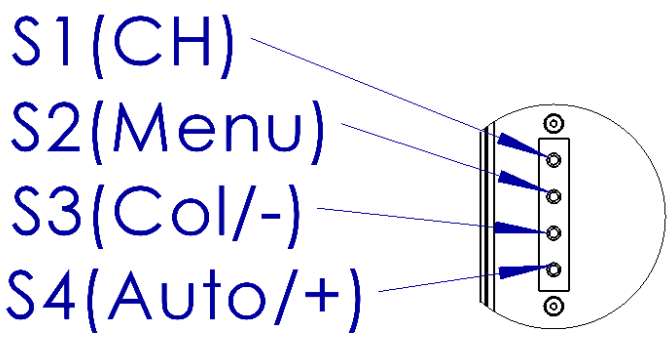
**Note:**
"**Signal Source**"
To select one from the two input signals VGA and DVI.
The display still has an auto search function. Should there be no signal at the selected channel, the source of signal will automatically change back to the channel that has signal. On the ASLOC poles only VGA input signal is used as standard.

**"RESET"**
By select this bar, the board will reset all the setting data from OSD menu. Into factory pre-set value.
**"Volume"**
A reserved bar to make adjustment of the audio volume, no function at the current application.

- When settings are changed, those changes are stored only when user leaves the menu through proper path using BACK or EXIT functions to leave the layer menu. Should the user leave the menu without any motion after the pre-set time out, the menu will be closed without memorising changed settings.

# Operation of 8” Landscape Screen and its adjustment buttons

Located at the rear of the screen are 4 function buttons that control the display. These functions are:




- **“Auto/+”** key (S4): **Auto Position calibrated key**, when pressed this key will force the display perform the position calibrated routine. This key is only valid at the HDMI input signal condition.
- **“COL/-”** key (S3): **Auto Colour calibrated key**, when pressed this key will force the display perform the Colour calibrated routine. This key only valid at the HDMI input signal condition.
- **“MENU”** key (S2): This key will bring up a menu of settings for the display, there are only three valid buttons once entering the menu, S2, S3 and S4.
- **“CH”** key (S1): There are two input signal channels available on this Board, HDMI and DVI. When both input signals are applied, pressing this key can change the input channel from one into the other. ASLOC Poles have only one of the two input signals applied (HDMI); therefore, the board will auto select the channel that has signal feed, thus, this Key (S1) does not have function as a Hot Key.

## Display MENU

When pressing S2 under normal display conditions, the screen settings menu will become active with the following sub menus:

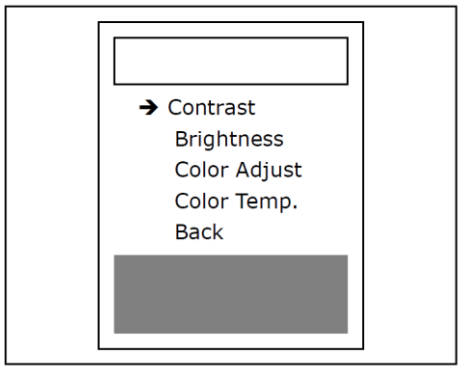
- Colour
- Image Setting
- OSD Menu
- Signal Source
- Audio
- Misc
- Exit

At this point only three Keys S2, S3, S4 are valid. The functions are as follows:

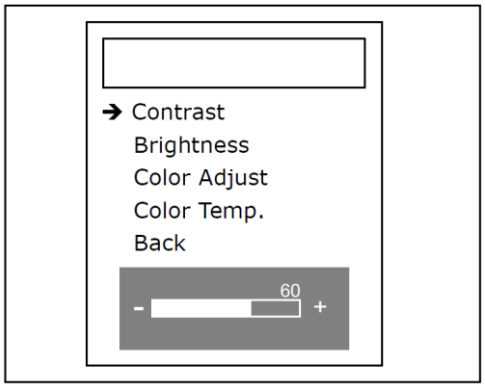
- Pressing the **Menu** (S2) key will change the key into an **"ENTER"** key, it will also bring up the first layer menu screen.

- **S3 (-)** key and **S4 (+)** key are used to scroll to the function needed in the menu with **S2** being the enter function. After pressing enter the display will show sub menus. Scrolling down and selecting **"EXIT"** on the menu, will bring the menu up one layer.

- Press the **Menu/Enter (S2)** key while at the "**Color"** Bar and you will enter the second layer to adjust **the picture quality** of the display.

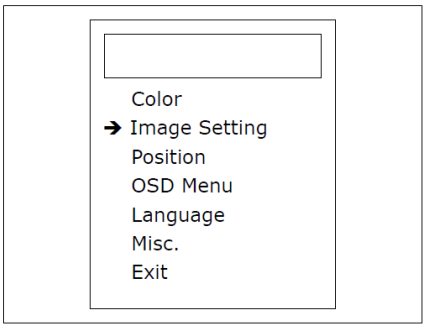



- By pressing the **S3 (-)** key or **S4 (+)** key, select the function bar needed. Press the **S2 (ENTER)** key to enter (select) that function and enter the 3rd layer, which will populate the shaded block below the options.




- By pressing the **S3 (-)** key or **S4 (+)** key, adjust the selected Value (e.g. contrast in the example above). Press the **S2 (ENTER)** key or select the **"BACK"** Bar can move **layer 3** into **Layer 2**.

- Press the **Menu/Enter (S2)** key while at the Layer 1, **Image Setting** Bar, will enter the second layer to adjust **the picture Setting**.




Second Layer options:

- Clock
- Phase
- Sharpness
- H. Position
- V. Position
- Back

- By pressing the **S3 (-)** key or **S4 (+)** key, select the function bar needed. Press the **S2 (ENTER)** key to enter (select) that function and move into the 3rd layer to adjust settings.
- Press the **Menu/Enter (S2)** key at a specific option to adjust, adjustment is made using the **S3 (-)** key or **S4 (+)** key, **Menu/Enter (S2)** will bring you back out of the option also.

- Press the **Menu/Enter (S2)** key while at the Layer 1, to highlight the **OSD Menu** Bar. This will enter the second layer to adjust **the OSD ICON's position and Timer**.

- The following options are available.

- OSD H.Pos
- OSD V. Pos
- OSD Timer
- Language
- Back

- By pressing the **S3 (-)** key or **S4 (+)** key, select the function needed. Press the **S2 (ENTER)** key to enter (select) that function and move into the 3rd layer, pressing **S3 (-)** key or **S4 (+)** will adjust, pressing **S2** will go back out of the layer.

- The signal source can also be selected from the 1st layer menu, this cycles the the interface sources to the screen, in ASLOC the source is **HDMI**.

- There is also an audio option in the 1st layer to adjust volume and mute, however the ASLOC as standard does not provide interfacing audio speakers to the screen.

- There is also a **Misc** option on the 1st layer menus, which is scrolled down or up to using **S3 (-)/S4 (+)**, pressing **S2** over the **Misc** option will enter into the Misc menu. By pressing the **S3 (-)** key or **S4 (+)** key, select the function bar needed. Misc provides the following functions

    - Auto Adjust – this will auto adjust the screen with the source.
    - Color Adjust – this will auto adjust the colour with the source.
    - Reset – This will reset the display to factory functions.
    - Back

  Press the **S2 (ENTER)** key to enter (select) that function.

- When settings are changed, those changes are stored only when user leaves the menu through proper path using BACK or EXIT functions to leave the layer menu. Should the user leave the menu without any motion after the pre-set time out, the menu will be closed without memorising changed settings.

# Cleaning and Maintenance

The ASLOC Imaging system is predominantly maintenance free. The outer casing and front screen can be cleaned, it is recommended that the front camera units are kept clean of dust particles, especially within the areas of where the camera lens and LED illumination are located, as seen in shaded blue areas of figure 10.

The outer casing and screen can be cleaned with a soft anti-static microfibre cloth. The camera unit has a hardened coating applied to prevent major scratches forming, however it is recommended not to use any abrasive pads or products when cleaning the device. It is important to keep the camera lens location free of scratches, obstructions or marks. If using cleaning products on the ASLOC, it is recommended to avoid any containing acetic acid (vinegars).

It is not recommended to operate the touchscreen with any sharp objects, doing so would scratch and potentially break the touchscreen. The screen is a resistive touchscreen and can be operated by people wearing gloves. Please do not spray any cleaning products directly onto the touchscreen. To clean the touchscreen we recommend gently applying a soft cloth to remove loose contaminants/dust. Please ensure no to little pressure is applied directly to the touchscreen, otherwise the screen could become scratched. To disinfect the touchscreen we recommend very gently applying an alcohol-based disinfecting wipe to the screen (the wipe can be dampened with alcohol-based solution, but not soaked). We recommend drying the touchscreen directly afterwards with a clean anti-static microfibre cloth.

Please **do not** spray or apply liquid cleaning products (including alcohol-based cleaning liquid) directly onto the touchscreen. Doing this will allow liquid to soak into the resistive screen causing a conductive path between the resistive touchscreen configuration and can cause the screen to fail. A small amount (one spray) of alcohol-based disinfecting touchscreen safe cleaner can be applied to a soft, dry anti-static microfibre cloth. The cloth can then be used to gently clean the screen. Please dry the screen with a dry, clean and anti-static microfibre cloth immediately afterwards.

Please note that any area on the front of the camera unit between the LED illumination and camera lens is a free area that does not affect the functionality of the system.

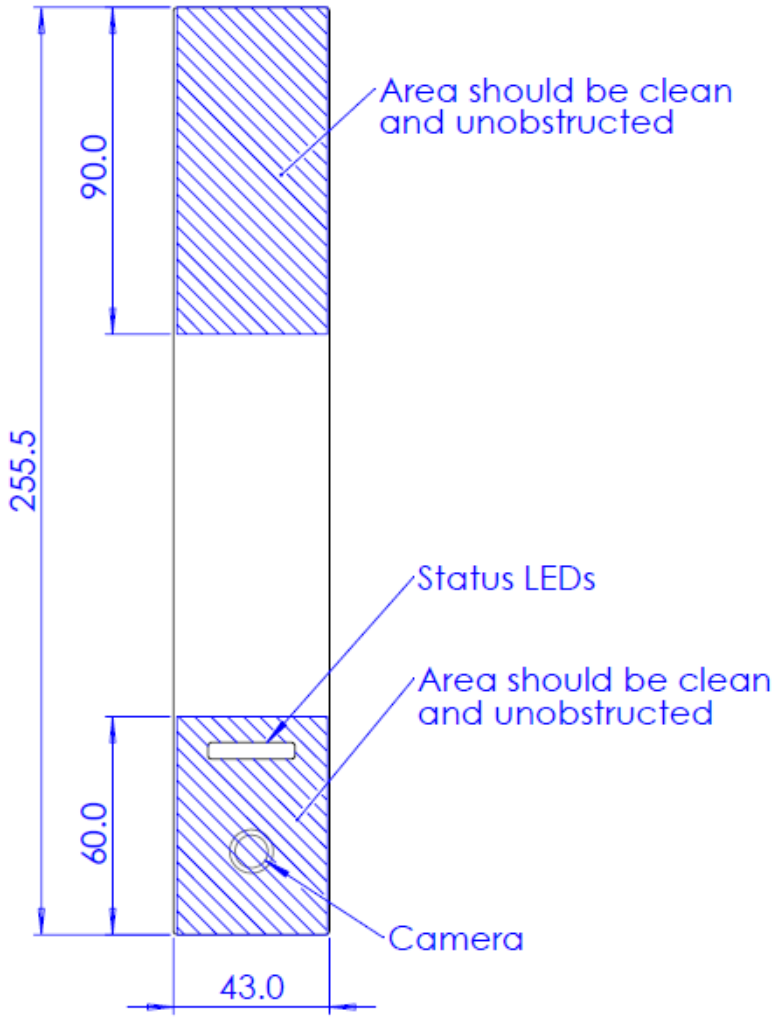



*Figure 10: Cleaning and free areas on ASLOC Camera unit*

# Error Condition Handling

The hardware has a programmable watchdog function, which will verify successful communication with the host. Data is bulk transferred from the camera over USB3.0 to the host. The watchdog can detect inactivity over a set timeout period between the hardware and host and undertake a reset of both camera and host USB to reinitiate enumeration. In this case, a change in colours will be seen on the status central LED. The resets work as a full power down and restart of the system. The system also has a primary watchdog built in to restart the camera, if it detects any processing problems. Any other error conditioning would be defined and run through the host software.

# Specification

### Camera

| | |
|---|---|
| Camera Technology | Near infrared (NIR) Mono |
| Resolution | 1280 x 960 |
| Pixels | 1.2 Mega Pixels |
| Shutter | Global Shutter |
| Maximum Frame Rate | 40fps |
| Technology | High Dynamic Range (HDR) |
| Spectral Response | NIR with 850nm centre wavelength |
| Input Voltage | 5V DC (USB powered) |
| Interface | USB 3.0 |
| Output | 12-bit |
| Data transfer | USB3.0 High Speed Bulk transfer via WinUSB/Libusb |
| Maximum cable length | 3 metres |
| Control protocol | Proprietary via open source LIBPSINC<br>*Cameras can optionally have a programmable watchdog - recommended minimum 60s extendible to 999.999s or off* |

### Illumination

| | |
|---|---|
| LED technology | Near Infra-Red (NIR) |
| Peak Current | 1.5A |
| Maximum Power | 2.5W |
| Mean Time Before Failure of ASLOC (MTBF) | >100,000 Hours. |
| Ambient temperature range | 0°C to 60°C |
| Supply voltage | 12V DC (Powered from certified power supply 90-264V |
| Power inlet | 2.1mm DC connector |

## Power supply

| | |
|---|---|
| Ideal Power PSU part no. | 25HK-AB-120A250-CP6 PSU,12V 2.5A |
| Input voltage | 90-265 VAC 50Hz |
| Output | 12V DC @ 2.5A |
| Type | Switch mode regulated. |
| Insulation resistance | >50M ohm with 500VDC applied. |
| Withstand voltage | 3.0KV for 2 seconds. |
| Approval | EN 62368-1:2014+A11, BS EN 62368-1:2014+A11,<br>UL 62368-1 & CSA C222.2 No. 62368-1-14 Audio/Video Information and communication Technology Equipment – Part 1: Safety Requirements<br>AS/NZ 62368.1:2018, GB4943.1-2001, CNS14336-1 (99)<br>and J62368-1(H30) |
| Protection | Short circuit and overload with auto recovery |

## Landscape Screen

| | |
|---|---|
| LCD Size | 8” Diagonal |
| Active area | 174 (W) x 104.4 (H) mm |
| Native resolution | 800 (W) x 480 (H) |
| Auto rescale | Inbuilt auto rescale for non-native mage size |
| Aspect Ratio | 16:9 |
| View Angle | (U/D/L/R) 80/80/80/80 |
| Contrast Ratio | 700:1 |
| Brightness | 900 nits |
| Colour Depth | 16.7 million colours |
| LED Lamp Life | 100,000 hours to half brightness |
| Operating Temp °C | -30 to 80 |
| Touchscreen | Resistor type 5 wire. USB interface |
| Interface | HDMI |

## Portrait Screen

| | |
|---|---|
| LCD Size | 6.5” Diagonal |
| Visible area | 132.48 (W) x 99.36 (H) mm |
| Native resolution | 640 (W) x 480 (H) |
| Auto rescale | Inbuilt auto rescale for non-native image size |
| Aspect Ratio | 4:3 |
| View Angle | (U/D/L/R) 70/70/80/80 |
| Contrast Ratio | 600:1 |
| Brightness | 560 nits |
| Colour Depth | 16.2 million colours |
| LED Lamp Life | 50,000 hours to half brightness |
| Operating Temp °C | -20 to 70 |
| Touchscreen | 5-wire touch screen with USB interface |
| Interface | VGA (HDMI can be optioned) Visible area |

**Enclosure**

| | |
|---|---|
| Material | Dry powder coated aluminium |
| Main body diameter | 61.5mm |
| Stand body diameter | 86mm |
| Circular mounting flange | 150mm diameter |
| Enclosure height | Single Camera Unit: 713mm (With Base) 710mm (Without Base)<br>Dual Camera Unit no Screen 941mm (With Base) 938mm (Without Base)<br>Dual Camera Unit with Screen 1037.5mm (Base) 1034.5mm (Without Base)<br>Please note bespoke lengths can be specified and a wall mount is possible. |
| Flange mounting holes | 3x8mm blind threaded holes on 110mm circle *(see diagram)* |
| Cable entry | 1 cable entry hole to be provided by the client<br>(Entry through centre section of stand) |
| Mean Time Before Failure (MTBF) | Significantly over 100,000 Hours |
| Approvals | CE and UKCA compliant with low voltage directive certified PSU<br>RoHS phthalates compliant (amended 2015/863)<br>EMC compliant (*EN 55032:2015, EN55035:2017, EN61000-6-1:2019)* |

# Contact Us

For further information on our products and solutions please feel free to contact us. This can be done through our website at https://www.perception-si.com/contact-us
Alternative you can call us on +44 (0) 1302 729126.

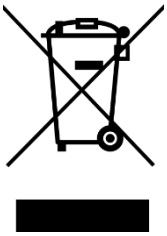
# Copyright and Confidentiality Statement

# Declaration Statement and Safety Notices

Perception Sensors and Instrumentation Limited hereby declares that the device is in compliance with the essential requirements and other relevant provisions of electromagnetic compatibility directive 2014/30/EU and UK 2016 No 1091 - Electromagnetic Compatibility Regulations 2016, meeting performance criteria set by EN 55032:2015 (Electromagnetic compatibility of multimedia equipment – emission requirements), EN55035:2017 (Electromagnetic compatibility of multimedia equipment – immunity requirements) and EN61000-6-1:2019 (Electromagnetic compatibility: Generic Standards – Immunity standard for residential commercial and light industrial environments). The Imaging unit fulfils the requirements of BS EN 62471:2008, Photobiological safety of lamps and lamp systems, with a lamp classification of exempt to IEC 62471:2006, meeting the requirements of Directive 2006/25/EU, Artificial Optical Radiation. The device itself is a USB 3.0 5V DC powered unit and exempt from the Low Voltage Directive 2014/35/EU and UK 2016 No 1101 - Electrical Equipment (Safety) Regulations 2016. The device follows the Restriction of Hazardous Substances in Electrical and Electronic Equipment directive 2011/65/EU (Amended by 2015/863, phthalates compliant) and UK 2012 No 3032 - The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 Amended by 2015 No. 863 (phthalates compliant).

Safety notices:
CAUTION
Do not use this product near water.

Indoor Use Only



RECYCLING This product bears the selective sorting symbol for Waste Electrical and Electronic Equipment (WEEE). This means that this product must be handled pursuant to European directive 2012/19/EU and UK 2013 No 3113 - The Waste Electrical and Electronic Equipment Regulations 2013, to be recycled or dismantled to minimise its impact on the environment. The user has the choice to give this product to a competent recycling organisation or to the suppler when they buy replacement electrical or electronic equipment. Perception Sensors and Instrumentation Ltd. is a business to business (B2B) Producer under UK registration number WEE/FB4237XX.